

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 54 WALL STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.
SECOND QUARTO SERIES, VOL. V., No. 42] SATURDAY, OCTOBER 13, 1849. [WHOLE No. 703, VOL. XXII.

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PRINCIPAL CONTENTS.

Iron Ores and Iron Manufacture.....	639
California Gold Region.....	640
Intelligence from the Placers.....	641
Description of Florida.....	642
Railways in Germany.....	612
Wilmington and Manchester Railroad.....	613
P.P.F. Degrand's Plan for a Railroad to the Pa- cific.....	643
New Albany and Salem Railroad.....	643
Baltimore and Ohio Railroad.....	644
Investments in Massachusetts.....	65
Lowell and Lawrence Railroad.....	615
Railroads in Vermont.....	615
" Maine.....	615
" Michigan.....	615
Philadelphia and Reading Railroad.....	615
Boston Plan of a Railway to the Pacific.....	617
Railroad to the Pacific.....	647

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PUBLISHED BY J. H. SCHULTZ & CO., 54 WALL ST.

Saturday, October 13, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 624.

NEW YORK

Attracted by the abundance of these ores and the extent of the woodland convenient to them, a company was found about twenty years since to commence the manufacture of iron here, either in the bloomery fire or blast furnace. The earlier trials were in blooming, and some bar iron was made, which was neither cold short nor red short, and which proved of superior quality for its tenacity. An examination was made of it by Professor Walter R. Johnson; and his report, published in the Journal of the Franklin Institute, shows that it was quite equal to the best of American bar iron. But great difficulties were experienced in the process of manufacture; and though the best skill the country could afford was employed, it was not at all successful. With some varieties of the ore no loup could be produced; with others the loup would not hold together under the hammer; and with all a large proportion of iron was lost in the cinder. A small blast furnace of seven feet across the boshes was then built to run the ore into pig iron. This has now been in operation about six years, but all this time working with the greatest difficulty, and several times chilling. The pig

iron for the most part is a silvery high iron of extreme hardness, sometimes mottled and high iron mixed.—What is singular, the hotter the furnace works, up to a certain point, when it is sure to chill, the more it runs this peculiar silvery high iron, yielding it for weeks together. With various modifications in the form of the furnace, with hot and with cold blast, with every variety of flux that could be procured, with ores thoroughly roasted, and in a raw state, and under the best skill and experience, not a pound of glassy cinder has ever been produced, nor the furnace been made to run freely for a day at a time. As it usually works, the cinder is of two kinds—one jet black and spongy, which shoots out like forge cinder and suddenly cools—the other a mixture of unreduced ore, iron, cinder and charcoal, heavy and black, which is hauled out in great quantity from the hearth, where it collects without separation, threatening constantly to chill the furnace. There is another kind, obtained in experimenting with calcareous fluxes, of more stony structure, thick and heavy, which flows sluggishly and cools in wrinkles across the current. This is a dangerous cinder, for it gets under the iron in the hearth, sticks close to its walls and is sure to fill it up, unless removed with the severest labor. Such fluxes are found by experience altogether unsuited to the ores. They are worked with sand or quartz and a very siliceous clay, a part of which is made into a grout with the fine stamped ore—ten parts of ore to one of clay. With a less able and enterprising company and a manager with any less than the extraordinary patience and perseverance of the present superintendent, Mr. Andrew Porteus, the works would long ago have been abandoned. But they continue from year to year under his care to turn out from one to two tons of iron a day. It is true this is with an unusual consumption of charcoal and of ore; but the iron is thought to possess such peculiar qualities for the manufacture of steel, that this expense is not so much regarded; neither that of transportation, which to New York city has been, until the present year, as high as from \$12 to \$16, or even \$18 the ton. It is now reduced by thorough repairs made at great expense by the company this year, on the whole line of road from the old State road to Tahawus, a distance of nineteen miles, and of increased facilities in the navigation of Lake Sandford; so that hereafter it is thought it will not exceed nine dollars per ton. With the same determination to succeed, the company have commenced to build a new and larger furnace at the head of navigation, in the hope it may prove more successful than the present small stack.

The true cause of the difficulty of working these ores was not fully known until the summer of 1848, when it was ascertained by Mr. Hayes of Boston, that the Mill Pond ore contained no less than ten per cent.

of titanic acid. Professor Johnson informs me he had also detected its presence, without, however, having determined its quantity. From the behavior of all the ores found in the hypersthene rock in the crucible, as well as their working in the large way in the blast furnace, the bloomery fire, and in Dickerson's patent forge, it is evident they all partake of the same general character, and that it is titanium alone, which renders them so refractory; and also that this is present in such proportion as to baffle all economical working of them with our present skill for the purposes to which iron is usually applied.

Having tried with them no less than forty experiments with different fluxes in crucibles exposed to high temperatures, I here subjoin a table containing the results, which may be of service to others meeting with refractory ores, of whose nature they are in doubt. The fluxes employed were such materials as the country around the mines afforded, and which could be procured for use in the blast furnace. The only glassy cinder obtained was with the Cheney ore; all the others refused to separate, behaving precisely in the crucible as in the blast furnace. The great difficulty of exactly determining the percentage of titanic acid in ores insoluble in acids, and the uncertainty in which we are as to the proportion, which renders an ore worthless,* give an important practical bearing to carefully conducted assays in the dry way. The result of these is to suggest as the only remedy for the refractory nature of the ore a thorough trial in the furnace of the Cheney ore mixed in different proportions with the others. Its not being conveniently accessible has stood in the way of its trial, and a fear lest it might impair the iron in the qualities desired. I have been informed that subsequently to my experiments an attempt has been made to use it, but with no improvement in the running of the furnace. I do not know to what extent the trials were carried, but under the management of Mr. Porteus, they were probably sufficient to determine the value of the ore.

Several of my assays being but repetitions of others, or varying little from them, a selection is made of all that are necessary to exemplify their behavior with the different fluxes. The flux, called the wall rock, is from the wall of the Mill Pond ore bed. It is one of the varieties of the hypersthene rock. A mixture of this with

Professor H. D. Rogers, in the Pennsylvania State geological report for 1840, mentions a titaniferous ore, which occurs in Chester county, and was worked for a time in the Isabella furnace, but was finally given up on account of its refractory character. It was carried in large quantities to the bog ore furnaces in New Jersey, and there worked mixed with the bog ores with some success. According to Professor Rogers the ore contained 22.39 per cent. of titanic acid, and 59.44 per cent. of iron.

the Serpentine-like mineral, whose analysis is given above, readily melted before the blowpipe into a glassy cinder. The clay is a highly siliceous variety, containing about 80 per cent. of silica. The limestone contains about 84 per cent. of carbonate of lime. The siliceous limestone contained 54 per cent. of silica and 37 per cent. of carbonate of lime.

The assays were made either in Hessian crucibles, brasqued, (lined with charcoal) or in blue-pots of the most refractory nature, with fine charcoal added to the flux. These, after their contents were thoroughly ground and mixed, were placed for the first nineteen trials in a powerful blast anthracite assay furnace, and subjected to heat sufficient to change the texture of the Hessian crucibles, and sometimes melt them, for from one and a half to two hours. The other twenty-one assays were made in a black smith's forge, and the heat kept up by continual blowing. The weights given are French grammes, equal to 15.4 grains each.

TABLE OF ASSAYS OF THE ADIRONDAC ORES, WITH VARIOUS FLUXES.

No. of Assay.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
Mill pond ore	2	5	30	30	30	30	30	60																																
Sandford ore		3	10	10	10	10	20																																	
Wall rock.....	6	6	15	10	3	10																																		
Serpentine-like mineral 2		6	5	10	3	5																																		
Clay.....		6	..	..	15																																		
Limestone .....		..	..	5	..	10																																	
Furnace cinder	3	..	5	5	3	5																																		
Quartz .....		..	..	..	..	..																												
Feldspar.....		..	..	..	..	10																																	
Siliceous limestone...		3	..	..	..	..																														
Cheney ore .....		..	..	..	..	..																												

Remarks on the Foregoing Experiments.

No. 1. Cinder black, spongy, glossy; no glass; no metal; fusible before the blowpipe without difficulty.—Bronze color outside—indicative of titanium.

Subjected to very intense heat in another crucible the bottom of the cinder became covered with fine shot of iron.

No. 3. With borax in part for flux, a jet black glass was obtained of close texture and smooth. Also a smooth button of steely character, equal to 40 per cent. of the ores.

No. 4. A few buttons of crystalline high iron separated: cinder black, spongy, fusible before the blowpipe—burning with scintillations of iron.

No. 6. Iron partially reduced, soft and of good quality, but did not separate in a button from the cinder.—Cinder porous, of copper color outside, fusible with difficulty.

No. 7. Cinder black, spongy, glossy, easily fused.—Button of high iron, curiously crystalline on the surface—weighing 50 per cent. of the ores. The best results so far.

No. 9. Cinder quite fusible, black, light, spongy.—Button of iron separated, and some shot scattered in the cinder.

No. 12. Heavy mass of cinder and iron; no iron se-

parated; crucible melting. All mixtures of the feldspathic rock proved bad.

No. 14. An experiment with the ore alone in a brasqued crucible. It melted well, gave a crystalline button of iron, and a porous, black, fusible cinder.

No. 15. An experiment in brasqued crucibles with lumps of the furnace cinder—of the black, spongy kind, the best the furnace makes, it is working well with clay flux and grouted ore. Button of the Hessian crucible melted out, and its whole texture made porous and spongy; but the pieces of cinder were only softened and stuck together.

No. 16. Several pounds of broken ore, bricks, lime and charcoal thrown together in blue-pots. Kept an hour in intense white heat. Contents became quite fluid and thin. Some iron separated; but the cinder remained of glossy black color, light and porous. It was among the most fusible of all the cinders obtained. There is a singular difference in the fusibility of many of these crucible cinders and the utter infusibility of the furnace cinder, which closely resembles them in appearance, as that tried in No. 15.

No. 17. Cinder black, fusible without difficulty—mixture melted readily. Button of iron, fine grained, white and tough, equal to 40 per cent. of the ores.

No. 20. Melted readily, making the common black, spongy cinder.

No. 21. Similar cinder produced at a heat melting the crucible.

No. 23. Cinder tolerably good, but black. Button of greyish iron 40 per cent. of the ores.

No. 29. Separation bad—Cinder dull, black, stony.

No. 30. First glassy cinder, color dark greenish red. Button of high iron separated, equal to 27 per cent. of the ore.

No. 31. Cinder black and puffy, like much made at the furnace. Button of high iron weighed 40 per cent; some shot of iron remained in the outside of the cinder.

No. 33. The cinder cut the crucible and flowed through the side, leaving a button of high iron, equal to 39 per cent. and some glassy, black cinder on the walls of the crucible.

No. 37. Glass cinder, dark, with reddish or olive tinge. Hard iron, appears to be No. 2 quality—equal to 63 per cent. of the ore; some of the iron, however, came from the flux. Best result.

No. 38. Good glassy cinder of dark color, deep green shade. Iron high, equal to 42 per cent.

No. 39. An experiment with 37 parts of Mill Pond ore and 13 of Sandford ore, mixed with 5 of cinder, 15 of the glass cinder from the Port Henry furnaces, and 8 parts of Port Henry limestone. Result—shining black cinder, outside pumice. Iron grey, good quality, equal to 53 per cent.

A series of experiments has been conducted by the late David Henderson Esq., with reference to the manner in which the per-oxides and protoxides are mixed in these ores. Taking the coarse black ore, and subjecting it in lumps to great heat for 30 hours in crucibles containing charcoal and closed from the air, he found the surface, when ground and polished, displayed an irregular appearance, a portion being metallic iron and the remainder protoxide. This he inferred was originally peroxide, and the metallic iron was protoxide. A longer continuance of exposure to the fire converts a portion into steely iron. But stopped at this point he considered the two oxides were converted as above—one into metallic iron, and the other into the condition, in which the former was at the beginning of the experiment. As to the character and importance of these experiments, I have only these remarks to offer, suggested to me in a letter from Mr. Hayes. "The difference in time, or ease, in reducing per-oxide and protoxide of iron to the metallic state, is scarcely perceptible. In the experiments did not the silicate resist, and the magnetic oxide reduce? In the hydrates of per oxides, the small quantity of organic matter present suffices to bring the whole to protoxide state, even in heaps. In both hydrogen and

coal I have not observed differences requiring a longer time, excepting in hard siliceous compounds and volcanic specular ores; indeed I should make the differences more dependent on structure than composition in the oxides."

I regret that exact analysis of these ores are not completed in time for this article. Specimens are in hand for this purpose, and the results will be communicated in a future number of the Journal.

These ores furnish the only instance, that has come under my notice, of magnetic ores containing oxide of zinc in such proportion, that the upper in-walls of the furnace are coated with a *cadmia*, the same as in the use of hematites. Karsten mentions that blende is often associated with magnetic ores. In this instance, however, none can be detected by the eye.

The company now owning this property consists of Archibald McIntyre, Esq., of Albany, Archibald Robertson, Esq., of Philadelphia, and the heirs of the late David Henderson, Esq., of Jersey City, New Jersey. They have secured in the vicinity of the village of Adirondac about 60,000 acres of land, a considerable proportion of which is well wooded with the birch, beach, maple and hemlock of this northern latitude; and on some of the more remote tracts white pine is still abundant. Every year by the damming of streams, or cutting of canals, new avenues are opened into the heart of this wild region, by which this valuable timber may be floated down into the Hudson. By means of the saw mills on the property it is furnished of superior quality for all building purposes at the lowest cost.—But though wood is so abundant all around the works, charcoal has cost, in consequence of the greater expense of living and opening roads, about the same price that is paid at the other iron works near the lake, and though the materials to supply it are owned by the company in such profuse quantities, it is doubtful whether they will ever obtain it at less than five to six cents to the bushel. The ores probably average about fifty cents a ton delivered at the furnace.

The pig iron is puddled immediately at works connected with the furnace and hammered into bars.—Besides one puddling furnace the company also have two *sinking fires*, in which some ore is regularly louped and hammered into blooms. The most skillful men, who have worked at the best establishments in the United States, always have failed in their first attempts to puddle this pig or produce a loup with the ore in the forge fire. It is only by long practise that they succeed, and then by no means to work it in either way with the same facility as other irons and ores.—The bars have heretofore been sent to Lake Champlain at a cost for transportation, as before stated, of from \$8, to \$18 a ton according to the state of the roads and were then shipped to Jersey City; but by improvements made the present year in the roads this item will be greatly reduced, the whole expense to Jersey city now being estimated at not more than \$9 per ton.

In the year 1848 the company built in Jersey City a cementing furnace for converting the bars into blistered steel, and also extensive works for running this into cast steel after a plan of Joseph Dixon Esq., with anthracite for fuel. These works have been in very successful operation during the present year, and the character of the steel has been found to fully warrant the favorable account of it given on page 307 of this Journal.

H.

The California Gold Region.

From the *Alta California*, Aug. 31.

It is now nearly two years since the discovery of the gold mines in the country, and yet it is for the first time, we can say, that we are able to give a correct account of them, an account that can be relied upon. Heretofore we have heard nothing but Arabian Nights stories about the gold region, drawn, if possible, with more vivid colors than even the Asiatic fancy could conjure up. The whole civilized world became electrified with these surprising stories, and set in motion; and every day

brings strangers to our shores from the most distant regions of the earth. So far so good; but it may not be so much longer, when crowds from Europe will begin to pour upon these shores. We feel it our duty, in view of the bad consequences that all exaggerations do produce, to contribute our share towards rectifying the impressions that went abroad upon the subject of the mines in this country.—Even our government at home, had not received an official account from its subordinates here, that represented the truth in its simple garb. In a word, there have been no thorough investigations of the subject; but people on all sides, simple citizens as well as government officers, were content to seize upon a few remarkable cases, that were made more so by passing through many lips, and represent them abroad as of common occurrence. Hence, much disappointment followed to hundreds who came here to shovel in, as they thought, the precious dust, and be off to their respective homes in the twinkling of an eye.

It is not to be understood that we are going to decry the mines; no, far from it; we mean to divest them of the mantle which the heated fancy has cast about them, and represent the simple truth, without any poetic ornament.

On the outset we wish it to be understood that we speak advisedly, we have surveyed, so to speak, the length and breadth of the mines by personal inspection and observation, at a great expense of our time, money and labour, and besides, we claim the right to presume somewhat upon the authority of science.

The region which here is known as the Gold Mines, is closed on the east by the Sierra Nevada or Snowy Mountains, running nearly north and south. Two large streams descend from the Sierra Nevada—one at the north, called the Sacramento River; the other on the south, known as San Joaquin. These two streams run, as if purposely, to the apex of the triangle they enclose, there to meet and make a common and united irruption upon the waters of San Francisco Bay. In this triangle, thus formed by these two rivers, with the Snowy Mountains, are numerous streams; but they all are tributaries either of one or the other river; the largest of them are at the north, and empty themselves into the Sacramento. The surface of the country, looking westward from the ridge of the Snowy Mountains, which may be from five to six thousand feet above the level of the sea, is broken up into ridges, giving directions to the streams that separate, some west by north, others west by south, and gradually growing smaller, they get confused into hills, till they finally soften into the plains enclosed by the two above mentioned rivers. The plains, generally speaking, are covered with luxuriant grass skirted along the rivers with oak timber. As the hills rise, vegetation becomes scantier. The range of mountains in which gold is found, is distinguished by a uniformity of its vegetable kingdom, which is neither meagre nor very abundant. The oak predominates here, only now and then relieved by several varieties of the pine family. As the gold disappears, the reign of the pine and the granite extends. The depositaries of gold look universally more inviting to the beholder than their barren neighbors, the former always have the figure described by the line of beauty, viz: the curved line, be they ever so precipitous, as they frequently are—a distinction never to be lost sight of. The extent of these auriferous hills is greater than the public know or imagine, but not in the direction it is supposed. They extend beyond the Sacramento, and even San Joaquin, northwest of the former and southwest of the latter, bending round towards the sea coast. Nay, the same formation, with more or less difference, runs along the whole Pacific shores till it is lost in the southern portion of the Chilean republic; but gold has not been, nor probably will be, found anywhere in equal abundance as in Upper California. This abundance, however, is much exaggerated by the heated imagination of the public. It is not in the nature of placer gold to be durable long. A very few years, when there will be many arms at work, will exhaust it; its origin is the guaranty of this fact. The breadth of this auriferous region limits itself within the lines running north and south from forty to sixty miles from the ridge of the Sierra Nevada; and on the west, as the hills begin to soften into the plains.

At some remote period in the history of the globe,

the same internal convulsion that heaved up the Sierra Nevada, has also upheaved the auriferous hills, which at first presented a naked surface to the atmospheric changes, by the influence of which, the quartz constantly breaking up, left free the precious metal on its surface. In the progress of time, the same atmospheric influences caused to accumulate, on these hills, soil which grew deeper with every decay of vegetation, till it grew strong enough to support the majestic oak. The freed particles of gold thus became covered by the soil, and mixed up with it, and the process of the separation of the metal from the stone was arrested. How gold was injected into the veins of quartz is more than we can say; but the fact that it was so, in a liquid state, is beyond question, as we see it adapt itself to the sides of the stone in all imaginable forms, from the finest filament to the largest lump ever found with a most variously indented surface, filling up completely the crack of the stone, always tending to a rounded pear-like appearance, as is the case with all melting substances. When freed, external friction, of course, modifies its appearance more or less; hence we find it, in rivers particularly, in fine flakes, but when it is in larger bulk, it puts on a plate-like appearance, as if it were hammered out by the hands of an artisan—as really it is by the frequently enormous weight of stones under which it is deposited. Water, that universal carrier, washing the sides of the hills, brought the gold from the surface into the ravines and rivers, to which its own weight facilitated the progress.

According to the strength of the current of water, the weight of the particles of gold and the obstacles in the way, it is deposited in one or another spot, the lighter particles of course floating away farthest from their original bed. As this process of gold deposition has taken place in some remote period of the earth's existence, hence we find all these deposits, generally speaking, covered with a greater or smaller depth of soil, sand, gravel, and stones. Strictly speaking, gold does not belong to the rivers—it was washed into them from the adjoining hills; hence it is useless to look for gold at the head of those streams when the neighboring hills are not of the auriferous nature; and we find this fact corroborated by our personal examination of the heads of the streams of the gold region. The same rule holds good, for the same reasons, in regard to the lower portion of a gold carrying stream, except that it is limited by the fact that particles of gold may be deposited a considerable distance below their original source.

The mode of deposit being made clear, it will be equally clear that it is not on every spot in this very auriferous region that we must look for gold, which fact experience proves to be true; or at least, it is not on every spot that we can find enough of it to make it an object to bestow our labor on it. Hence it equally follows, the limitation of the quantity of gold to be expected from the mines as a general aggregate, however rich they may prove. The first comers had the best chances to hit upon rich deposits; but as diggers multiply, the chances of falling upon virgin deposits grow smaller, and they will have to be content with what the others, through imperfection of their labor, have left; consequently the work becomes more and more heavy and less profitable; although it may be yet sufficiently compensatory, if the expenses of living be not excessive. This is precisely already the case—the labor is much harder this year than it was last. At present there are not so many of those happy hits as formerly, although we yet hear now and then of a lucky haul, which, however, when it reaches the ears of the public, becomes extremely distorted, and particularly so, when companies that have dammed some spoils of some of the rivers wish to dispose advantageously of their shares; these easily find ready letter-writers, who communicate the lucky event to the public thro' the press. The accounts of successful digging in gold that went abroad, never have been accompanied with statements of hardships attending the process; yet we are free to confess that there is no harder labor than that of gold digging and washing; this species of labor requires the strongest sinews inured to fatigue in peculiar localities, together with the general discomfort attending upon life in the mines, may make gold digging particularly irksome. Yet all this can be borne, and one's labor may sometimes be crowned with brilliant success. We have made the above statement with the view of

laying the subject before those who may yet be novices in the matters, that they may understand their own case; we are far from discouraging the new aspirants after the favors of dame Fortune; we tell them, take their chance—it may be a good one; but such and such circumstances are attending this courtship. Those from distant parts who, on mere sound of the discovery of gold in California, rush headlong, sometimes leaving very good business and comfortable living, cannot but rue the day if they put their sole dependence upon their success in the mines. If they would come here with an intention of following some patient calling, they could not but grow rich with time. We have already plenty of miners: a larger number of them only diminishes the profits of all. However, come they must, for they are bent on it, be the consequences what they may.

When this gold mania ceases to rage, individuals will abandon the mines; and then there will be a good opportunity for companies with heavy capital to step in; there will be enough of profitable work for them; and it is then that the country will enter on a career of real progress—and not till then. Such companies, with superior mechanical facilities to do much labor in a short space, will be enabled to go over the whole mineral field, although already dug over by individuals, and reap yet a rich reward for their efforts. And when there will be no more gold washing to be done, then a new era in the mining of the country will commence—we mean, a regular system of mining by sinking shafts into the very bowels of the rocks, will be entered upon. Spots for this system of mining are to be found in this auriferous region.

[Intelligence from the Placers.

The month of August has multiplied the number of gold washers on the principal streams of the Sierra Nevada; but the prospects for the mass crowding on are but imperceptibly lessening. The water is nearly at the lowest stage, and quite in proportion to the increase of laborers and chances are rendered more favorable by this circumstance. New washings have been discovered, and old ones abandoned. We have no prodigious gold stories to relate; but, confining ourselves to the simple assurance of good luck for those who labor, we trust not to defeat the expectations of the most visionary.

The most southerly stream occupied by miners, is Maripossa river, about 20 miles southeast of the Merced.

The Sacramento river probably forms the most northerly boundry stream of the placer; but it is erroneous to suppose the region watered by it auriferous. Gold has never been found upon that stream in quantities sufficient to justify continued labor. Its "golden sands" have never been silted, except in poetic strains.

At Mormon Island a company are engaged in scientific mining. They employ quicksilver in extracting the metal from ground previously subjected to the cradle or pan process, and with a machine invented for the purpose, average about \$200 per day.

A TRINITY RIVER EXPEDITION.

Major P. B. Reading, whose name is identical with the earliest Anglo Saxon explorations of California, has recently returned from a trip into the interesting region of Trinity river. He started from the Sacramento about the middle of June, travelled up Clear Creek, and crossed the ridge dividing the waters of the Sacramento from the streams flowing into the ocean by the only practical route. His camp on this ridge was one night above the snow line. Trinity river was found to possess auriferous sands, and as the party followed up the stream, the ore was found in greater abundance. They averaged for the few days remaining there about 40 dollars each per diem. We shall publish a more detailed account of this expedition in a few days.

SUCCESSFUL GOLD DIGGING.

Dr. H. Van Dyke, a member of the North Fort Dan and Mining Association which company has recently completed a lateral canal at Beals Bar, a little above the juncture of the North Fork with the Rio Americano, has just returned from their scenes of operations. The work of drainage had been completed only three days before he left, and though the company labored under many disadvantages

tages, they had raised, in this short time, over \$15,000.

This association is composed of about thirty hard working men, and from the result of the few days' labor since drainage, and the fine prospects of continued success, they confidently count upon a yield of about ten ounces per diem, each man, the next and succeeding month.

Description of Florida.

Extract of a letter from L. C. Gaines, of South Florida, to a friend in East Tennessee.

I will endeavor to give you a short and correct description of the southern portion of the peninsula of Florida, as far as ascertained by me, beginning at the 29 parallel of North Latitude, or south of the Suwannee river. As you go south, there is a continued elevation until you reach the everglades, which is the source of the St. Johns river.—This region is naturally divided into three portions, possessing different characteristics. The middle portion is a kind of table land, diversified with hills and slopes, and from twenty to thirty miles wide, containing fresh water lakes of various sizes; some twenty or thirty miles in circuit, surrounded by excellent hammock land and abounding in the finest fish. Some of these have outlets, into the St. Johns, and some of them have no outlets. This table land is almost entirely destitute of streams of water, but few springs, and their branches generally sink before they run half a mile. In almost all parts of this portion there is a sufficient number of open clear ponds for stock water, and water is easily procured by sinking wells of various depths. The usual depth is thirty or thirty five feet. The water of these wells is more or less impregnated with lime, but pleasant enough to the taste, and I believe healthy.—There is one spring in Marion county that is really a curiosity. It is in fact the bursting up of a river. An ordinary steamboat might turn in the spring. It is 80 or 100 feet deep and the water is so clear that you might see plainly a dime on the sandy bottom. Its stream affords navigation for floats and barges, and will, no doubt, be run by steamers when the business of the country shall warrant it. It empties in the St. Johns river.

More than half of the land of this strip is pine barren, mostly poor, though some of the pine land is but little inferior to the hammock. These hammocks are the strangest feature of the country. They are covered with dense forests of the richest imaginable growth, and rendered almost impassible by the undergrowth. You come upon them in the pine woods suddenly without any change in the soil, poor pine land often bordering immediately on the richest hammocks, which look like islands or rather oases. What astonishes you is, that these hammocks are higher ground than the surrounding pine land. While exploring one you expect every minute to come upon some large stream of water, but are generally disappointed, and on coming to the outskirts, find the pine land descending instead of ascending, as you were expecting to find it, for they have the appearance of rich river bottom. These hammocks are of various sizes, from five acres to as large as 40,000 acres; some bordering on the

lakes, mostly surrounded by the pine barren, with a few springs and high-land ponds. In some portions of the country you find oak and hickory or pine and hickory, which is nearly as good as the hammock land. There are several qualities of these various kinds of land. The richest of the hammock land, I am fully persuaded, is as rich as any land in Alabama, Mississippi or Tennessee, their richest river bottoms not excepted. This strip comprises Alachua, Marion, and Benton counties, and is the most desirable portion of East Florida.

The strip on the Atlantic coast is a low flat country, mostly watered by the St. Johns river, which runs parallel with the coast from south to north, from 80 to 40 miles from it. This is a magnificent river, connecting a chain of lakes from the everglades to its mouth. It has an average of a mile in width, independent of its lakes, some of which are forty or fifty miles in circuit. It has but few tributaries and but little current. There is but little rich land either on the lakes or river, but what there is, is very valuable on account of the convenience of navigation, so necessary to the sugar raising and the successful culture of the tropical plants. The river and its lakes are a protection against killing frosts, which sometimes destroy the fruit trees in the interior. There are also some very valuable lands on the Atlantic coast south of St. Augustine, and on Indian river, which is only an inlet. The greater portion of this strip is poor, flat saw-palmetto pine land, with few places for settlement, and consequently the population must always remain scarce, though in time there will be in it many large sugar plantations. Health on the coast and river is good—mosquitoes quiet annoying though not worse than in Alabama and similar situations.

The strip on the gulf is more desirable; well watered—large springs making many short but navigable rivers, with an immense amount of rich hammock. This white population will never be large on this strip, from the fact that it is unhealthy to settle in the hammocks, and on the surrounding pine lands with some exceptions, are low, flat saw-palmetto pine barrens, and very wet in the rainy season. The Indian territory is said to embrace some of the most valuable and desirable of the peninsula.

To return to the middle strip. It is the most desirable, because there is more rich land and it is more regularly dispersed over the entire country than in other portions. There is a better prospect for health, and consequently will be the most densely populated with the best society—climate mild, warmer in winter and cooler in summer than in higher latitudes, or in the same latitudes not possessing the same contiguity to old ocean. Killing frosts never make their appearance in my county (Marion) until about November. Further south vegetation is never killed except in extreme seasons. The thermometer never raises above 94 degrees in the shade. The summers are long but the heat is counter-acted by the nights, which are ever pleasant, and you know our days never grow so

long as with you, consequently the heat is less oppressive. As to health, new comers, generally to go through the process of acclimating incident to a change of life. The diseases are but few, mostly intermittents and dropsical cases.

The productions are corn cotton sugar-cane potatoes, peas and pumpkins; all succeed well, and in fact it is the home of the vegetable tribe. The best lands will yield from 30 to 40 bushels heavy corn, a bale peted gulf cotton or from one to one and a half hogsheads sugar (weighing 1500 lbs) per acre. Sea Island cotton can not be raised very advantageously in the interior, nor is the Cuba tobacco a valuable crop to any but the most experienced hands. The best crop for profit I believe, is cane corn and a small amount of cotton. The cane and corn may be planted together, or on the same land, without interfering or but very little with each other, as the corn, if planted early, will be made before the cane is large enough to require much of the force of the land. Five acres of corn and cane, and four or five acres of cotton would be the crop of the hand, which he could very easily cultivate. During the cotton picking season from August to November, the time to commence the saving of the cane crop, a very nice amount of cotton might be housed, say at least,

2 1-2 bales at \$30	\$75.00
5 acres cane, 1500 lbs., each 7500 at 5 cts.,	375.00
Corn to supply a farm not counted.	\$450.00

\$450 to the hand might be realised if properly farmed, though this is better than any large planter is doing and better than many small ones, for there is neither science, system nor economy used here. Yet in farming many of the tropical fruits are being tried here and seem to succeed well. The orange is indigenous. We have generally a rainy season from June to September, which greatly interferes with farming operations. This year, however, the seasons are regular, and this, last of June, we are suffering some for rain.—Knoxville. Register.

We copy from the North British Review, the following account of the railways in Germany:

In Prussia, a comprehensive system of railways, to the extent of 3200 miles, was planned by Government; but up to 1845, 652 miles only were completed, as shown in the following table—the political disturbances in 1848 and 1849 having doubtless prevented the execution of the general plan:

Berlin and Anhalt.....	93½	£726,873
Berlin and Potsdam.....	16	210,000
Berlin and Stettin.....	83	783,000
Berlin and Frankfurt-on-the-Main.....	42½	420,000
Length of Line in Miles.		Cost.
Lower Silesian }	134	1,200,000
Upper Silesian }	49½	630,000
Breslau and Schweidnitz...	37	285,000
Magdeburg and Leipzig...	67½	615,000
Magdeburg and Halberstadt.....	35½	286,855
Dusseldorf and Elberfeld...	16	304,170
Cologne and Aix-la-Chapelle.....	52	1,425,000
Cologne and Bonn.....	18½	131,000
Total.....	652	£7,017,193

According to this table, the average cost of the Prussian lines is about £10,000 per mile.

The following table shows the length and cost of each of the lines formed in Austria:

Length in Miles.	Cost.
Linz Gmunden Budweis...119	£742,000
Emperor Ferdinand's line.179	1,700,000
Vienna to Glognitz.....46	1,950,000
Olmütz and Prague.....151	1,853,725
Marzschlag and Gratz...57½	not given.

Total.....495 £4,936,325

These lines show an average of about £11,300 per mile.

The small States of Germany have executed the following lines of railway, 541 miles in length, of which 371 miles belong to the Government:—

Length in Miles.	Cost.
Baden.....97	£1,704,036
Brunswick and Hanover.38	209,707
Brunswick & Oscherleben.43	240,000
Brunswick and Harsburg.27½	127,500
Hamburg to Bergstorf...10½	191,332
Altona and Kiel.....64	3-2,500
Leipzig to Dresden.....71½	975,000
Saxon Bavarian.....51	900,000
Taunus Railway.....28	265,361
Municinto Augsburg.....37½	350,000
Louis, Southern and Northern.....70	4,286,500
Nuremberg and Furth.....4	17,708

Total.....541 £9,676,249

The average cost of these lines will be about £19,000 per mile.

Wilmington and Manchester Railroad.

The directors of the Wilmington and Manchester railroad company had a meeting at Marion Court House on the 22d ult. The annexed abstract from the report made to the board by the resident engineer (Mr. Fleming) will show how the work is progressing:—

Total length of road.....162 miles
Grading under contract.....129½ "

Stock taken in grading.....\$197,000
Materials for superstructure, &c. 41,600

\$238,700

From junction to Great Pee Dee river Swamp.....65½ miles.
Grading within this distance under contract.....61½ "
Superstructure do.....37½ "

From Great Pee Dee river Swamp to state line.....30 "
Grading within this distance under contract.....16½ "

From State line to Wilmington.....66½
Grading within this distance under contract.....51½ "

No. of Negroes employed in grading.....516
No. overseers and white laborers, about.....38

Total.....554

The Marion Star of last week says:—We understand that the board have determined, if possible, to lay down the road to the Great Pee Dee river and have it in operation by the last of the ensuing year, and at all events to the turning point, within 9 miles of Darlington, C. H., which will do all of the transportation and travel west of the Great Pee Dee river, and a portion from this side. We hope soon to be able to report the whole of the contractors in Marion district east of the Great Pee Dee at work with sufficient force to accomplish the grading during the coming year.

This is important with respect to the state subscription, for the sooner the work is done in this state, the sooner will the company be able to get the subscription of South Carolina and use it in the purchase of iron, to which the present low prices of that article are most favorable. It would be a source of profit, as well as immense saving to the company, to effect their purchase now, and we learn the directors are using every exertion to do so.—*Wilmington Chronicle.*

RAILROAD TO SAN FRANCISCO.

Appendix B. to P. P. F. Degrand's plan for a railway to the Pacific.

When the railroad is in operation from Boston to San Francisco, the length of passage for its 3,000 miles, (going night and day, at the rate of 25 miles per hour, including stops,) will, for the express train, be only five days.

For 1st class cars, at 2 cents per mile, the fare will be only.....\$60

For 2d class cars, at 1 cent per mile, the fare will be only.....30

The cost then of transporting from the Atlantic seaboard, 150,000 persons to California, and of bringing back 50,000 persons from California, will be as follows:

Fare of 150,000 passengers, 1st class, at \$60 each.....\$9,000,000

Time and food for said 150,000 passengers, for 5 days, at \$5 per day, say \$25 for each person.....3,750,000

Fare of 50,000 2d class passengers, at \$30 each.....1,500,000

Time and food for said 50,000 passengers for 5 days, at \$2 per day, say \$10 for each person.....500,000

Total cost by the railroad line.....14,750,000

The express train can be provided with berths and other conveniences for the night time. It can make short stops, at convenient places for meals. It can be provided with newspapers, pamphlets, books, chess boards, backgammon boards, and other amusements, as is a steamboat. The cars can be well ventilated, night and day, by Espy's at the top, and can be lighted by lamps, serving also as ventilators. On a portion of the road they can occasionally have a band of music.

If it be said that all the travellers will not elect to go by the express train, night and day, and that there should be, for their time, a greater allowance than 4 days, the reply is, that many of the travellers will, at their starting point, be at the west of the Atlantic seaboard, as, for instance, he who starts from St. Louis, in Missouri. Starting thence, he will spend only about half the time, and pay only about half the fare of him who starts from the Atlantic seaboard; because his journey will be only 1,600 miles.

We may therefore safely estimate that the above amount, (\$14,750,000,) will be the average of the whole, by the railroad line.

Let us now examine what is the expense, by the sea route, for the same individuals:

To transport, by the sea route, the same number of persons, will cost as follows, part going round Cape Horn, part through the Straits of Magellan, and part through the Isthmus of Panama:

Passage for 150,000 1st class passengers, at \$50 each.....\$22,500,000

Time of said 150,000 passengers, for 100 days on an average, at \$3½ per day—say \$350 for each person.....52,500,000

Passage for 5,000 2d class passengers, at \$50 each.....2,500,000

Time of said 50,000 passengers, 100 days on an average, at \$1 per day, say \$100 for each person.....5,000,000

Total cost by the sea route.....\$82,500,000
Deduct cost by the railroad line.....14,750,000

Clear saving in the expense.....\$67,750,000

To this saving we may add the extra risk of life, by the sea route, and the disappointment and extra delays occasionally incident to a voyage by sea.

In point of time, of great hardships and of expense the route by land, as it now exists, over a trackless waste, compares even more unfavorably with the railroad line.

If, then, we estimate that there will go California annually, 150,000 persons, and that 100,000 of them will settle there, and 50,000 come back, the annual saving of expense, by having the railroad, will be \$67,750,000.

In other words, the saving in two years will more than repay to the nation, the whole cost of the railroad from St. Louis, to San Francisco.

If we adopt the plan, now before Congress, of

building the road, with the cash produced by the sale of the land given by the United States, (which land cannot be sold and reduced to cash, until the road is built,) we shall inevitably delay the completion of the road, more than fifty years. The loss of \$67,750,000 a year, amounts in fifty years, to \$3,387,500,000; a sum sufficient to pay off the whole British national debt!

Shall this enlightened nation—responsible as we are for our high fame—tamely submit to this disgraceful and enormous loss? Or shall we avert it and show ourselves worthy of our high destiny, by the simple process of borrowing United States stock, to the amount of \$98,000,000; thereby creating the tangible and efficient means of completing this great national work, in the short space of five years?

Indiana.

Mr. Brooks of New Albany, the able and efficient President of the New Albany and Salem railroad company, arrived at this place on Monday evening last. He came to consult with the directors of the Crawfordsville and Wabash railroad company, relative to the necessity of a speedy junction of the two roads. We learn from Mr. Brooks that the Albany and Salem road is now progressing with great rapidity. Fifty-six miles of the road are now already under contract, of which, eighteen will be in operation sometime during the fall. The citizens of Lawrence, Owen, and Monroe, are all alive to the work. Nearly enough stock has been taken to justify the board in putting the road under contract to Gosport.

Having ascertained the feelings and wishes of the people on the whole route from New Albany to Crawfordsville, and having learned from Major Elston the condition of our road and the views and ability, Mr. Brooks is decidedly of the opinion that a junction of the two roads can, with proper efforts, be effected in three years from the present time, and with two such industrious, energetic, persevering, calculating men as Mr. Brooks and Major Elston to lead, we cannot doubt that all suitable means will be put forth and a speedy completion of the road effected. The distance from New Albany to Lafayette is about two hundred miles. This road when completed will be the longest in the State, passing through its very heart, having as its tributaries as rich a tier of counties as are to be found in the west. It will constitute the great central thoroughfare of Indiana.

It is a fact admitted by all, that the longer a railroad the more profitable the stock, and the greater the facilities for getting to market the more valuable property lying upon the route, hence we have a double inducement to complete the road. Not only will the stock yield handsome dividends, but every acre of land will be enhanced in value, every kind of produce will command higher prices, and every department of business will be promoted.—*Wilmington Jour.*

Baltimore and Ohio Railroad.

The 23d annual report of the president and directors of the above company has just been issued. It treats:

I. Of the Main Stem.

During the fiscal year ending on the 30th September, 1849, the aggregate receipts of the company from passengers, and mails, and merchandise, have amounted to \$1,241,202 45; being an increase of \$27,540 88 over the preceding year. Of this amount \$846,708 49 have been received from freight and \$394,496 96 from passengers, showing a large augmentation of the former, and a decrease of \$72,009 05 in the latter.

The total cost of working the road, and keeping it in repair during the same period, has been \$614,634 15, which will be found distributed under the various heads of expenditure.

The net revenue of the Company is thus shown to be \$596,571 03, or 8½ per cent upon the original capital of \$7,000,000, and about 8½ per cent upon the augmented capital of \$7,227,400, being an excess of \$45,113 23 over the year 1848. There has been carried to the credit of the sinking fund, during the same period, for the redemption of the bonds due on account of the Washington Branch, the sum of \$33,561 69.

In accordance with a resolution adopted on the 5th

of December, 1847, that from and after that period, the net earnings of the road should be applied towards its extension Westward, and in the increase of its capital; and, to the amount so applied, the President and Directors should increase the capital stock of the Company, by delivering to the Stockholders at par, new shares of stock in proportion to the respective shares represented by them. In pursuance of this policy the Board have directed an increase of the capital stock to the extent of the net revenue thus appropriated or retained, during the past year, being a dividend of 5 3-16 per cent. upon the original capital of \$7,000,000, or 5 per cent. upon the augmented capital of \$7,227,400.

During the past year seven Passenger cars, one first class Locomotive, and 42 cars of all other descriptions have been constructed in the Company's shops; and, in all instances, have proved highly creditable to the mechanical skill of the efficient head of that department.

Considerable modifications have been introduced, since the commencement of the year, in the organization and details of the service, looking to increased economy and efficiency in the general management of the road. So far these improvements have been attended with satisfactory results; and, the less frequency of interruption to the tonnage and passenger business, from the condition of the track and other causes, attest the value of the changes which have been made. It is confidently believed that these results will be more satisfactory hereafter, when the new system comes to be more thoroughly tested, and modified, as experience may suggest, from time to time.

Since the last annual report, the latter road to the South side of the Basin, forming a continuous communication with tide water, has been completed, and is now in full operation. The large abatement which has taken place in the horse power heretofore employed, consequent upon the necessity for using the track through Pratt street, and the increase in the coal trade, amounting during the year to 108,000 tons, has been attended with the most decided advantage to the Company. The facilities afforded by a direct communication with the water, and the steady demand for coal from abroad, has given increased activity to this branch of the company's business. The entire cost of the latter road to tide water, including the purchase of additional grounds at Locust Point, has been \$175,422 43, of which \$107,362, 02 have been paid in bonds, and \$69,060-41 in money.

The board are happy to announce that the improvements in the road bed, directed by a resolution of the board, on the 13th of October, 1847, are now rapidly drawing to a close. The total cost of these improvements up to the present time, has been \$251,934 65. The amount outstanding upon the contracts will not exceed \$25,000. When this work shall have been completed, no curve will then exist of a less radius than about 600 feet, excepting at three points upon the line. The advantage of these improvements is already being felt, in the greatly increased speed with which the travel is conducted, and the general effect upon both passengers and tonnage trains passing over the road.

The heavy demands for reconstruction will also cease to operate as a drain upon the Company after the present year. This work has been attempted with an aggregate cost of \$660,462 45, of which \$27,038 77 have been paid in Bonds, and \$633,423 68 in money. Before the winter sets in, the Company will have a continuous track of heavy rail in complete order from Baltimore to Cumberland.

The total amount of outstanding liabilities, attendant upon these various works as above detailed, will be found not to exceed \$50,000 of Bonds falling due in 1867. This sum, together with the Sterling bonds, when used, constitute the entire indebtedness of the Company, from whatever cause, exclusive of the bonds issued in the construction of the Washington branch road, which are more the secured by the property and revenue of that branch, and towards the redemption of which, a sinking fund of \$145,780 29 has been provided by the Company.

Before disposing of this part of their subject, the board would allude briefly to the large increase of the trade in hogs, as indicated by the operations of the past year. In 1847 the whole number of hogs transported over this road, did not exceed 84,500; in 1848 the number had increased to 111,852, and du-

ring the past fiscal year we have to note a still further increase in this tonnage to 195,665, or equal to 75 per cent. over the year immediately preceding. During the single month of December, there were transported over this road upwards of 64,000 hogs. The rapid development of this trade has gone beyond the most sanguine expectations of the Company, and has opened a new prospect of wealth to the city of Baltimore.

II. Of the Washington Branch.

The operations of the Washington Branch have been satisfactory, and show an improvement in the business of the road. The gross revenue of the year ending on the 30th September, 1849, has been \$274,832 95, and the expenses of working the road, and keeping it in repair during the same period, including \$8,090 paid for new passenger cars, and \$6,715 01 for losses by accidents—\$6,172 36 of which originated prior to the 1st of October, 1848, have amounted to \$109,174 94, to which if we add the bonus of one-fifth of the receipts from passengers paid to the State, will leave the sum of \$161,191 71 chargeable against the earnings of the road. The net revenue notwithstanding, will be found to exceed that the preceding year.

Of the net revenue, in addition to the semi-annual dividend of 3 per cent. declared in April last, the board have declared a dividend of 3 per cent. payable on and after the 16th inst.

The reconstruction of the bridges at Little Patuxent and Bladensburg, swept away by the freshet of October, 1837, has been commenced, and will be pressed to completion without unnecessary delay.

The board regret to say that they have not been able to conclude an arrangement with the authorities of the city of Washington, for the establishment of a permanent station house in that city.

III. Of the Extension to the Ohio River.

By the adoption of the Cumberland route, the best interests of the company have been respected, and this great work entered upon its western progress with a cordial and individual support.

Prior to the commencement of active operations, and before any part of the road was advertised for contract, the board deemed it of the first importance to place the company in a situation to ensure the letting of their work upon the most advantageous terms, and at the lowest cash prices. With this view a sale of £200,000 of the 5 per cent. bonds of the State of Maryland, was effected with the house of Messrs. Baring, Brothers & Co. on terms entirely satisfactory.

Since the commencement of the present fiscal year, a distance of 103½ miles of this road, comprising all the difficult sections, between Cumberland and the Ohio river, has been placed under contract, and considerable progress has been made upon many parts of the line. During the present autumn, the entire space between Cumberland and the Tygart's Valley river will be in active progress of construction. The board are happy to announce that the prices at which this work has been let, promise to secure a reduction upon the estimated cost of about 22 per cent., amounting to about \$600,000.

Assuming a similar scale of contract prices for the next 20 miles of the road, extending down the Tygart's Valley river, as far as Fairmont, on the Monongahela river, the total cost of the graduation, and of the masonry above described, would not exceed \$2,389,777—which would fall within the estimates, about \$650,000. And a further application of like prices to the same work upon the remaining distance to the Ohio river would exhibit a saving sufficient to bring the entire cost of this portion of the work to the original conjectural estimates of the chief engineer.

The chief engineer of this company has been fully aware of the heavy responsibility which attaches to the department over which he presides, in the estimates which he has presented of the cost of this work; and the large saving upon the contracts which have been let, on the portion of the line now in progress of construction, shows how cautious that officer has been, in avoiding an under estimate of the amount required to complete the connection with the Ohio river.

A confident opinion has been expressed by the chief engineer, that the entire line of the road from its present terminus at Cumberland to the city of Wheeling may be completed in two years from

the 1st of June next, and the lettings which have taken place, were intended to equalize the difficult sections, so that the whole work might be accomplished without delay at any intermediate point within the period stated by him.

The completion of this work in three, instead of six years, will be attended with a saving of more than the entire cost of the road from the Monongahela to the city of Wheeling—besides which, it will place the city of Baltimore in connection with the Ohio river, in advance of any other work. This company can never be permitted to struggle on, with its own tardy resources, when delay would be attended with such serious consequences. With a moderate effort on the part of our citizens, and as the board believe, without risk, the whole work may be completed in two years from the 1st of June next, and it remains to be seen whether, with their co-operation the credit of the company cannot be made available in this important undertaking.

From 1840 to 1849, the aggregate receipts of this road have advanced from \$432,885 to \$1,241,105 48. The regular and steady gradation, by which this increase has been reached, cannot fail to satisfy the stockholders of the sound and healthy patronage which it is destined to command, when brought in actual contact with the Ohio river.

It is confidently believed that no line of road, either now, or which may be hereafter projected, will be likely to hold out the same attraction, to both trade and travel, seeking the shortest and most advantageous outlet, on the sea board.

Wheeling has been called the head of navigation of the Ohio river. From this point to Pittsburgh, the reputed terminus of the Central Pennsylvania road, is a distance of 90 miles, and the river trade and travel, when it has reached Wheeling, is almost as near to the city of Baltimore in point of time, by the Baltimore and Ohio railroad when completed, as to Pittsburgh by the river navigation.

The advantages of water transportation for articles of heavy bulk, cannot be too highly estimated and it is believed that the travel on the Ohio river by steam, judging from the experience of our own waters, will never be materially diminished, by other and more direct lines of communication by railroad. The cost of transportation from Cincinnati to Wheeling would not exceed two dollars per ton, and from \$2 50 to \$3 per passenger for the entire distance. The facilities afforded by the line of this road could not fail to give to the city of Baltimore, the monopoly of this great highway.

But looking, as we must needs do, to the connection with the extended line from St. Louis and Cincinnati, the position of this company is still more advantageous. If the western roads converging at a common point at Columbus, intersect this road at the Ohio river, the distance from Columbus to Baltimore is less than from the same point to Philadelphia by 55 miles, than New York, via Cleveland and Dunkirk, by 216 miles, and to Boston by 336 miles.

These advantages in favor of the city Baltimore by the line of this road, are too formidable to be overcome, and they are rendered the more commanding when viewed in connection with the superior attractions of climate, and the unobstructed harbor which at all seasons of the year, opens a free access to the ocean.

In recurring to the benefits likely to flow from the prompt extension of this work, the board cannot but feel encouraged at the animating prospect which it discloses. No portion of our Union, whether considered in reference to its agricultural resources, or the genius and enterprise of its population, can be said to compare with the vast region lying west of the Ohio river—whose attention is now directed to this market, as the nearest and most convenient for its surplus products.

The city of Baltimore, commanding one of the finest harbors on the sea-board, and possessing advantages of climate not to be met with in any other point, defying the competition of any of her northern rivals, from her closer proximity to the trade of the west, and offering an outlet to her exports at all seasons free and unobstructed, may well be supposed to stand in a position second to no other city.—With the Baltimore and Ohio railroad on the one hand, pouring into her lap the products of Ohio, Indiana, Illinois, Missouri, Tennessee, Kentucky, and the extended valley of the Mississippi—and the Bal-

timore and Susquehann road, with a continuous line to Harrisburgh, placing her in closer connection with Pittsburgh by 23 miles than Philadelphia by her own central line, and offering the strongest temptation to such of the trade and travel as may be drawn from its greater northern attractions, at Cleveland, or any other point, she may well claim with these works accomplished, to have placed herself beyond the reach of future contingencies. Her system of internal improvements will be complete. If nature has been lavish of her gifts, the wisdom and enterprise of her citizens will not have been wanting, in the most liberal efforts, to make them available under the wise system which has been adopted.

By order of the board,
THOMAS SWANN, President.

Boston.

The subjoined is an estimate given by the Boston Courier, of the amount its citizens have embarked in a few leading enterprises, principally since the spring of 1846:—

In factories and manufacturing cities,	
The cities enumerated.....	\$13,000,000
Purchase of railroads out of State.....	8,000,000
Extension of old lines of railroad.....	6,000,000
Construction of new railroads in Massachusetts.....	7,000,000
Construction of new railroads out of the State.....	12,000,000
Boston Aqueduct, estimated as having cost with reservoirs and dead interest.....	4,000,000
Stock taken in United States loan.....	7,000,000

57,000,000

Amount unpaid less than 7,000,000, July 29th, 1848.

Estimated dividends to be received by citizens of Massachusetts, April to June, 1848—

From Banks.....	\$2,000,000
United States Loan.....	400,000
Railroads.....	3,000,000
Accumulation of Savings Banks.....	1,000,000

\$9,400,000

The valuation of the state for 1848, if the increase of value in Boston and its vicinity be any criterion, must exceed \$450,000,000, and the annual accumulation little short of 22,000,000.

Massachusetts.

Lowell and Lawrence Railroad Company.—At the annual meeting of this Company held yesterday, a large number of the Stockholders being present, the following gentlemen were re-elected Directors for the ensuing year, by nearly a unanimous vote, viz: William Livingston, Sidney Spalding, Otis Allen, Frederick Parker, Horace Howard, Isaac Farrington and Abner W. Buttrick. At a meeting of the Directors subsequently held, William Livingston was re-elected President, Frederick Parker, Clerk, and John A. Knowles, Treasurer of the Corporation. According to the report of the Directors, the road was put in operation July 1st, 1848, and the receipts and expenditures from that time up to the 1st inst., being fifteen months, are as follows;

Receipts for passengers.....	\$42,151.84
" " freight.....	10,182.09

Total amount of receipts.....\$52,333.93

Amount paid for running expenses,....\$28,531.13

Estimated amt of debts now due for expenses,..... 5,200.00

Amount of interest on loans,..... 4,500.00

Amount of div. of per cent. payable the 15th inst.,..... 10,000.00

\$48,231.14

Leaving as a surplus to meet any contingent expenses of the Company,....\$4,102.79
As much as \$1000 was expended during the last year for side tracks, draining and other improvements.—*Lowell Courier.*

Vermont.

Railroad to Highgate.—We are happy to an-

nounce that active steps are in progress to verify the surveys of the route for a railroad from Burlington Northward, towards Canada line. Edwin F. Johnson Esq., an engineer of established and high reputation, is now engaged in making an examination of the line. The results of his exploration and estimates will doubtless, in due time, be laid before the public. We have no question that they will show that a railroad can be constructed from Burlington to Swanton at an expense quite below the average cost of Vermont roads, and on an unusually favorable line in respects, of grades and curves.—*Burlington Free Press.*

The New York Courier and Enquirer contains the following from its correspondent in Washington.

Washington, Oct. 6, 1849.—The American people seem to have concluded that the much talked of railroad to the Pacific Ocean shall be commenced. The indications from all parts of the country are sufficiently explicit on this point. It is understood that the administration have determined to recommend to Congress definitive and important action in the premises. The matter may not be more than hinted at in the President's Message, but will probably be set forth in the report of one of the secretaries—probably in that of the interior. The proposition, for efficiency and practical wisdom, will commend itself strongly to the common sense of the country. I do not believe it will embrace any of the prominent features of the Whitney plan.

Whitney's Pacific Railroad.

At the Working Men's Convention held in this city last week, the subject of the Pacific railroad was discussed, and while the convention approved the work, condemned Whitney's plan as "a scheme of gigantic robbery, the successful prosecution of which would, more than any other cause, corrupt the National Legislature, and hasten the downfall of the republic."

Maine.

Railroad Meeting.—The annual meeting of the Kennebec and Portland railroad company was being held at Bath on Thursday last.—The meeting was numerously attended and the greatest harmony prevailed.

Reuel Williams, Geo. F. Patten, Wm. B. Sewall, John D. Lang, Joseph M'Keen, Marshall S. Hager, Thomas W. Smith, Wm. B. Grant, George W. Stanley, were chosen directors.

The doings of the directors in relation to extending the road from North Yarmouth to Portland were unanimously approved by the company, and it is confidently expected that on the fourth of July next the public will be able to ride on the rails of the Kennebec and Portland railroad into the city of Portland.

We understand that the original stockholders are allied until the fifteenth day of the present month to take the balance of the preferred stock, after which it will be offered to any person desiring to take it. Subscribers in this town can call on Mr. Gilman, Mr. Flagg, or Mr. Tupper, who are a committee to receive subscriptions until that day.—*Gazette.*

New Jersey.

Owners of Cattle bound to keep them off Railways.
New Jersey Supreme Court, July (1849) term.—*Vandegrift vs. Rediker.*

This was an action of trespass brought against the engineer of a locomotive, for running against and killing the plaintiff's cow. The cow was at large, and had strayed on an unenclosed part of the Camden and Amboy railroad, near Bordentown just as the train, at its usual speed, was approaching. The railroad, at the place of the accident, runs along the public highway, and the view along the track is unobstructed for a quarter of a mile each way. The bell was tapped, and the engine reversed, a few seconds before the collision, but not in time to stop the cars. The engineer was proved to be a generally careful man in business. The opinion of the Court was delivered at the present (July) term, by Mr. Justice Carpenter, the result of which is, that the owner of cattle is bound to keep them on his own premises at his peril; that an engineer in charge

of a locomotive is not liable for an accidental injury to a cow, which, suffered to go at large, has strayed on a railroad; and that nothing but wilfulness on his part will make him liable for the loss of a cow so exposed by the fault of the owner.

Michigan.

Erie and Kalamazoo Railroad.—At the regular annual meeting of the stockholders of the Erie and Kalamazoo railroad company, held at Adrian, Michigan, on the 1st day of October, the following gentlemen were elected directors for the ensuing year:

George Crane, Esq., Adrian, Michigan; Addison Comstock, do; George Bliss, Springfield, Mass.; Hon. Washington Hunt, Albany, N. Y.; Hon. Charles Blunt, New York city; Hon. Hugh White, Saratoga co., N. Y.; George W. Newell, Esq., Albany, N. Y.; T. W. Bradbury, Toledo, O.; Frederick Harbach, Esq., Cleveland, O.

The new board will meet in a few weeks, and in connection with the directors of the Michigan Southern railroad, will consider the various routes for the location and extension of the latter road from Hillsdale to Cold Water, and also the location of the line westward of La Porte in Indiana, towards Chicago. We learn that the surveys which have been going on for several months exhibit most satisfactory results, and that during the winter the entire line from Toledo or Monroe and Chicago will be located.

Pennsylvania.

Philadelphia and Reading Railroad.—We have the report of the managers of this road just submitted to the public. As it is very voluminous, and as we find the labor of abridgement well performed by the Boston Traveller, we take the liberty of borrowing its abstract of the report for our Columns.

The report of the Managers of the Reading railroad presents a brief view of the business of the road for the year ending June 30. The gross receipts have been \$884,537; and the expenditures 548,963. Net earnings 335,574—of which 272,625 was absorbed by interest on bonds, due July 1, and 62,949 remained for dividends on preferred stock. This is only 2½ per cent., instead of 3½ as was expected.—The managers state that this unexpected reduction of profits has been caused by an entire suspension, for nearly two months, of the coal business, through the concerted action of the coal operators. They are confident that 4½ per cent. can be paid in January next, making 7 per cent. for the year.

The managers do not go into detail in respect to the financial affairs of the Company, as the report of Mr. D. A. Neal, of Salem, which accompanies that of the managers, covers the whole ground.—They concur fully in Mr. Neal's statement and views, and recommend measures, in accordance with his suggestions, for disposing of the bonds which will become due in January next, and which constitute the present and urgent embarrassment of the Company.

Mr. Neal's report is a very elaborate document, filling 40 pages: The affairs of the Co., are stated in the minutest manner, and with a clearness which must render them intelligible to every reader. He must have waded through a sea of details, by which any other than the clearest head would have been overwhelmed. We should think his exhibit would be satisfactory to all parties, and that those particularly interested would be inclined to adopt this plan of relieving the Co., from the difficulty which is threatened by the approaching maturity of the 1850 bonds.

Mr. Neal proceeds in a business like manner,—and with a candor which commends his statements and observations to entire confidence,—to the all important inquiry, what the cost of the road has been, and what amount of income can be derived from it;

In other words, what is the real value of the property. In this inquiry is involved the question; whether the property existing in the shape of the bonds and stock of the Reading railroad, shall continue to be the sport of the stock market—a mere medium of speculation—or whether it shall be made to assume a permanent character.

In 1844, the liabilities of the company were estimated at \$9,457,569 64, for bonds, floating debt and stock (40,200 shares at \$50 each). Assuming this estimate to be correct, Mr. Neal compares it with that of the annual report of 1848, and shows that in the four years the liabilities were increased \$5,720,760 65; that is, that since 1844, that amount has been added to the capital. The manner in which this amount has been expended, is explained in detail, and may be seen by the following recapitulation:

	Nov. 30 1844	Increase.	Nov. 30 1848.
R. roads, de- pots & sta- tions	8,081,504 88	3,388,535 40	11,470,040 28
Engines and cars	1,047,182 08	1,231,144 28	2,278,326 36
Real estate.	269,688 00	208,846 52	478,534 52
Sundries...	43,862 44	649,444 12	693,306 56
Cash	15,352 24	7,226 42	22,578 66
Materials...		134,237 34	134,237 34
Telegraph stock		10,350 00	10,350 00
Delinq't sub- scribers...		25,000 00	25,000 00
Bills Re- ceivable ..		65,986 57	65,986 57
	9,457,569 64	5,720,760 65	15,178,330 29

A minute statement is given of the stock issued, and of the character of the bonds, mortgages, etc. The net earnings of the road for the four years—1844 to 1848—are shown to have been \$2,880,250 83, which amount was appropriated to dividends, tax on dividends, and interest on floating debt and bond and mortgages.

The accounts of the road are exhibited in detail, as brought down to June 30, 1848, when all outstanding accounts were adjusted, and the floating debt reduced to the amount of the Company's assets. The statement shows the following results:

On the 30th of November, 1848, the total cost of the railway, equipment and real estate was	\$14,226,881 16
Since increased by Disc't. on bonds sold in 1849	\$1,176,260 00
Bal. of bonds on loan of 1847-56	303,417 00
Interest on above	54,392 58
Land damages	1,050 10
Coupons paid in January, 1849	266,877 00
Back interest and allowances, as per P. and L. account	224,908 75
Discount on \$211,000 of bonds to be sold, at 60 p. c.	84,400 00
Estimated amount of unset claims, real estate for stations, etc.,	9,343 16
	2,153,435 15
Less sale of engine ..	1,750 00
	\$2,151,685 15
Total sum June 30th, 1849	16,378,566 31
Paid for by stock 84,362 35-100 shares,	4,218,117 50
Preferred ditto	2,336,000 00
	6,554,117 50
Bonds due 1850 2,533,700	
" " 1856 160,000	
" " 1860 6,920,800	9,614,500 00

Bonds and Mortgages	209,900 00	16,378,517 50
Balance		48 81
Property on hand, cash..	72,185 82	
Bills receivable	26,135 67	
Stocks and Securities received in settlement of accounts at their present market value	185,965 38	
Debts due considered good	156,169 45	
Do. doubtful 264,912 34	187,032 58	
Balance due from offices	59,978 61	
Materials on hand...	192,254 48	
Due from construction account	16,313 74	
Interest account	3,749 00	899,776 73
Telegraphic stock		899,825 54
		10,350 00

To balance which the company owe, ..	910,175 54
Notes payable	187,920 14
Drafts payable	1,105 00
Balances of accounts.	336,794 15
Back interest on 1856 bonds	13,851 20
Taxes and Int. on real estate	2,084 25
Suspense acct. for unset claims	32,846 66
Income account	335,574 14
	910,175,54

It will be seen that the cost of the road has been provided for by the stock and bonds, and all other liabilities are met by assets, which have been put at a valuation at which part of them has been and the balance by proper management undoubtedly will be realized. To cover, however, any possible deficiency, the company holds real estate at or near Richmond, not required for the purposes of the road worth 90 to 100 thousand dollars, which will be ample in any supposable case.

Here we have a clear view of the actual condition of the road at this time. Mr. Neal then goes into an interesting and very satisfactory consideration of the capacity of the road, under these circumstances, to give a return on the capital invested.—He comes to the conclusion—and this is a material point, for upon it depends the intrinsic worth of the vast property invested in the Reading railroad—that the road can be made to yield a net income more than equivalent to the stipulated interest on the loans. In a word, he estimates that after allowing for an ample renewal fund, and paying full interest on bonds, and 7 per cent. on preferred shares, a surplus of 200,000 dollars, or 4½ per cent. on the common stock, may be earned and appropriated in part or wholly, to the liquidation of the Company's liabilities. It is difficult to abbreviate Mr. Neal's statements, which are always very comprehensive; but the substance of his estimates in regard to operating the road may be stated as follows:

Taking the actual cost of the road, as stated, to be \$16,378,561 31, the interest on bonds and preferred stock is \$770,561; and this is considered a permanent charge on the business of the road. Another charge is a renewal fund, that is, a deduction from the income of an amount sufficient to perpetuate the road in its present state. This is set down at \$78,000, being based on the gross traffic, at \$3 per 100 tons carried 100 miles. Another permanent charge is a tax of 5 per cent. on dividends, which is demanded by the State of Pennsylvania. This is estimated at 27,469 90 dollars. A careful estimate is then made of the minimum average business for the next four years.

The result, in the aggregate, is as follows:

Receipts for transportation	\$1,913,000 00
Expenditures for do.	839,650 00

Net earnings	\$1,073 350 00
Renewal fund, interest, e.c. as above	876,030 90

Net income on common stock.... \$197,319 10
By the statement of accounts quoted above, it will be seen that the amount of common stock is \$4,218,117 50. This net income therefore is nearly 4 3-4 per cent.

Mr. Neal states that he has made this estimate with a strong leaning to the side of security, and not to support a favorite theory. He has so much confidence in it himself, that with five others whom he has no doubt he can find, he is willing to take the road for ten years, on this basis, and give satisfactory security for its fulfilment.

Mr. Neal suggests various measures of retrenchment in conducting the operations of the road, which are obviously feasible and necessary. He concludes by suggesting a mode of overcoming the greatest remaining difficulty, namely, the provision for the bonds becoming due in Jan. 1850, to the amount of \$3,864,800, and which it is admitted to be absolutely impossible to pay in cash at maturity. This plan, in his own words, is as follows:

"I assume that none of the 1850 Bonds are converted into Preferred Stock, but that the holders will accept in lieu of them new 6 per cent Bonds payable at some time beyond those due in 1860, say in 1870, secured by mortgage of the Road and Property of the Company, for the especial benefit of those who make such exchange with the following provisions:

1st. That out of the net income after paying 7 per cent on the Preferred Stock and before any dividend shall be paid on the Common Stock, the sum \$100,000 shall be deducted, three-fourths of which shall be invested in New Bonds, given in lieu of those due in 1850, so long as such investment can be made under par, and one-fourth in the '56 to 60' Bonds, on the Pennsylvania State Stocks, as per contract as in the Mortgage Deed of 1836.

2d. That the balance of the net income, shall be divided in cash to the holders of the Common Stock, until it amounts to seven per cent, and then to the holders of both Preferred and Common Stock.

3d. That the amount of the Renewal Fund, that shall not be used during the current year, be invested in the Mortgage Bonds, or Common Stock of the Company, whichever may be the most under par, but not at, or over par.

4th. That all Bonds and Stock, so purchased, shall be cancelled and new Stock to the same amount be created, but such Stock shall not be entitled to dividends for four years from the 30th of November, 1848.

5th. That at the end of the four years aforesaid, the Stock thus created shall be appropriated as follows:

So much thereof as shall have been purchased with the reserve from the Renewal Fund, shall be held for the purposes of that Fund. So much of the investment of the tax on earnings not divided, as may be necessary to pay the tax to the State on the dividend of stock, herein after provided for, shall be sold to meet that amount and the balance, if any, retained as a sinking fund.

The amount of the 1870 bonds so purchased and converted into new stock, shall be annually credited to the common stock at cost, till with the cash dividend paid, it shall amount to 7 per cent. afterwards the balance shall be credited pro rata to the common and preferred stock, and the issue made in January 1853.

No new stock being thrown on the market for 3 years, it will have a chance to recover.

In regard to dividends on the new stock it is clear that it makes no difference to the stockholders, they receiving in cash all the balance, whether it be divided among 100,000, or 110,000 shares, each receives the same amount of money.

If we suppose the estimate of the net income, in the report to be realized, the following will be the result:

Net income as per estimate	197,319 10
Add 1 per cent. interest, on the loans, due in 1850, which were then assumed to be	

converted and to bear 7 per cent. as preferred stock.....	38,647 00
State tax on dividend, on preferred stock, not taken \$270,529, at 5 per cent.....	13,526 45
	249,492 55
Tax on \$100,000, not divided but invested.....	5,000 00
Portion of renewal fund, not used in the year, say half.....	39,000 00
	393,492 55
The Cash Dividend will be \$249,492 55 less \$100,000 invested.....	149,492 55
less tax on \$52,173 45, amount of 1 per cent on 150 loan and on dividend on preferred stock above.....	2,484 45
	147,008 10

On 4,218,117 50 $\frac{3}{4}$ per cent, is 147,634 11

Note. It is evident, other things remaining the same, that this will be increased every year, by the interest on the bonds, or dividends on the stock purchased.

There will have been invested

account Stock.....	100,000 00	} each year.
“ Renewal.....	39,000 00	
“ Tax.....	5,000 00	
	141,000 00	

Or say in four years.....\$576,000 00

This, or some similar arrangement, it is thought, will give the holders of the matured bonds the security of a property almost certain to yield a revenue equivalent to a capital of \$17,000,000 dollars, pledged for only about half that sum; and that they will, without a question, receive their interest semi-annually, with the certainty of a gradual absorption of the principal. Without some such arrangement, the Managers may be driven to make an assignment of the property, which would be fatal to the interests of all concerned.

AMERICAN RAILROAD JOURNAL.

Saturday, October 13, 1849.

Railroad to the Pacific.

Should the Railway to the Pacific be private property, or under the control of persons interested in the results of its earnings?

Every part of the Union is interested in California—those portions the more distant the most so—the north and the east, if possible, more than the valley of the Mississippi; because the settlement of that country will open an extensive market for eastern manufactures and employment for eastern shipping. The expense of reaching this country, and of forwarding merchandise to it, is just so much of a draw-back upon the value of this new acquisition. To obviate this as far as possible, to practically bring together the two sections, is the object of a railway from the Mississippi to the Pacific. The value of such a work is to be measured in part by the amount saved by this over the ordinary channel of communication, & reaches its highest point, when it transports goods and passengers over it at the simple cost of transportation, and from the proper construction and management of the road, at the lowest possible charge. The great object of this road is to take from some central point on the Mississippi, at which will converge roads from Mobile, Savannah, Charleston and Norfolk in the south, and Baltimore, Philadelphia, New York and Boston in the north, passengers and merchandise received from these various points, and lay them down on the Pacific at the lowest possible cost.

If the road should be private property, it would be in the power of individuals to impose, in the shape of tolls, such a tax upon merchandise, and travellers passing over it, as they might choose.—Such a road could not for a long time at least have any competition. We have a right to suppose, that

in such a case, the owners of the road would make the most money possible out of their property, and thus the trade and commerce of the United States, and as the enthusiastic believe, of the world, would be subject to all the burdens that individual cupidity could impose. There is, therefore, the same and an equal objection against making this work private property, as there is to giving to individuals the sole privilege of navigating the Pacific, for reasons too evident to be pointed out. Public rights of such vast magnitude should never be surrendered to the control of individuals. Then are objections equally strong against making this work a public enterprise, and placing it under the control of the general government. Citizens of all parties recoil from the proposition of investing government with such a tremendous instrument of political corruption. The general government, too, may be considered as practically incompetent to the construction and proper management of this work. It is this feeling that has secured such favorable attention to the private schemes proposed, and this is the strongest argument that Mr. Whitney makes use of, and very properly so, in favor of his scheme; and as his road would inevitably fall into the hands of the general government, his strongest argument makes directly against his own plan.

By the plan proposed, the several States, each by its representative in the board of direction, have an equal voice in the construction and management of this work. The true interest of the whole people, therefore, will be carried out in the action of the directors. The plan makes the best provisions that can be made, that the road shall be built and managed at the least possible expense, consistent with true economy. By this plan, the strongest motive acting upon the directors, will be a desire faithfully and honestly to execute the powers with which they are invested. They can in no event, have control over, or custody of the money applicable to the road; which can only be drawn from the treasury, upon proper vouchers, in payment of work performed.—The agent of government holding the money, viz: the treasury department will have no connection whatever with the road. This plan, therefore makes the road popular in its design; secures to it the same economy of management as to a private enterprise, and imparts to it all the confidence that could be felt toward a work undertaken by the general government, and relieves equally of all fear of abuse or mismanagement of power either by the private individuals or corrupt officials.

For the American Railroad Journal.

Pacific Railroad—Boston Plan.

The concoctor of the “Boston Plan” must be no ordinary man: he has shown singularly strong instincts in Cocker’s well-known game of “Profit and Loss.” But in every point of view this Boston scheme is quite a unique affair. It is none of your crude, vague, off-hand thoughts:—it is a regular downright precise speculation. It proposes in the first place that no stimulus, stronger than cold water, shall be allowed to moisten any of the clay, human or vegetable, concerned in the Pacific railroad; and amongst other things of the first importance to the merits of the case, goes on to say that the men, poor souls, shall work by spells of eight hours duration, morning, noon and night. Now, we ourselves doat on precision above all things, and as in our opinion, only one thing more is necessary to make it perfect, we take leave in our admiration of this precious, this model ‘Boston Plan’ to suggest here that some provision be set forth on the face of the plan for providing the men on the sections west of the Mississippi with mosquito nets.

The Boston Plan might have presented itself to the world in a nutshell. It proposes that “a compa-

ny, in whose integrity and steadiness of purpose, confidence can be reposed by the nation,” shall, after paying into their own treasury two millions of dollars, have a right by way of loan to a new issue of United States six per cents, to an amount not exceeding ninety-eight millions; and that in addition to this, they, the aforesaid ‘confidence’ company, shall appropriate “a strip of land ten miles wide north of the line” for the especial benefit of themselves and their worships’ heirs male. Besides the security furnished by their integrity, these ‘confidence men,’ whoever they shall happen to be, will graciously give the government ‘a mortgage on the road and its appurtenances,’ ‘if,’ as the Boston Plan most innocently suggests, ‘the government desire it.’ One-third of the stock and a like proportion of the Directory is placed by this magnanimous scheme at the disposal of the general government. The interest on the 98 millions will be paid regularly—so saith the plan—and after fifty years the principal is to be paid off by annual instalments of two millions. Here endeth the ‘Boston Plan.’

Was ever known anything more preposterous than this ‘Boston Plan!’ A company of men say coolly enough—“My dear government, if you give us 98 millions, we will subscribe 2 of our own in Pacific railway stock.” This silly scheme is so full in even minor details, that absurd as such a thing seems, we must conclude that it is a complete enunciation, and that therefore as appears on the face of it a subscription of two millions dollars, will place at the disposal of a party of men unbound by any obligation, without any proviso, any security, the public money to the amount of ninety-eight millions! True enough, the ‘road and appurtenances’ are named as a guarantee for the good faith of the company—a guarantee which, to be by any means an equivalent for the amount to be guaranteed, presupposes the very good faith for which the guarantee is required. Here the Boston Plan humorously sends the company on a merry-go-round excursion after their own good faith, pretty much after the fashion of a certain dog that sometimes amuses us by innocently describing circles in pursuit of his tail. Again, we are told that this loan of 98 millions, furnishing an excellent medium of exchange with foreign countries, will have the same effect on trade as an addition to that amount to the circulating capital of the country. If the public are served by running into debt, the more the Boston Plan borrows the better: for our part, following its own most modest examples, we would suggest that in order to serve the public to the extent of another hundred millions the Boston Plan should go for a loan of 198 millions.

The estimated cost of the Pacific railroad is stated in the appendix to the plan at 66,666 dollars per mile; and the length of the line being given there as 1,600 miles, the total cost will therefore be upwards of 106 millions. Now, the capital of the company being fixed at 100 millions, and the limit of loan being fixed at 98 millions, the question suggests itself, who, if the estimate be correct, is to pay up the balance, 6 millions? The government? But if, as in our ignorance of the conditions of the case is quite possible, the cost of construction should reach the figure put forward under that head in another of the many plans brought forward, that is to say, 150 millions, who then is to make up the deficiency? Of course the government. Therefore we say that fixing the limit of loan at 98 millions is quite ridiculous; so also would be the pledging of the public credit on even a sufficient security to an amount to which imprudence or dishonesty only can

pretend on serious considerations to fix a limit.

One-third of the directors of the Pacific railroad are, according to the 'Boston Plan,' to be appointed by the government. Will the people allow a far more fruitful source of jobbing and corruption than than any, than all put together, of the 'places.' Even if this scheme were judicious in every other respect, we feel assured that the good sense and honesty of the country would condemn it on even this one ground.

If, as is very likely, the road would not pay the interest on the loan for the first few years, what is to be the result? If, as is also possible, the road does not pay its working expenses for some time, who is to make good the deficiency? How is the 98 millions to be drawn, altogether, or by degrees? as the work progresses, or whether it progresses or not? All these questions, the plan as it now stands enables the company to answer just as they please.

Again, this "strip of land 10 miles wide," representing an area of ten millions two hundred and forty thousand acres of land, taking it even at 20 cents an acre, will cover the total amount subscribed by the company, and forms clearly a certain reimbursement for their outlay, no matter by what waste and corruption the funds for the construction of the road shall have been expended. It is not by any means likely that a railroad to the Pacific, taking into consideration all the probable difficulties attending its construction, will for many years to come, pay 6 per cent. (the government interest) over and above its working expenses; and while, therefore, all hope of dividend on their stock will be lost to the company, their only object will be to make the railway, for the development of their 10 million acres, at all risks, at any cost, at any waste. This plan, therefore, fails to provide a judicious board of management, seeing that they are all, with perfect license to job, deprived of any interest whatever in the funds they are at liberty to disburse.

But the whole scheme is a piece of simple presumption from beginning to end. We are only surprised to find ourselves speaking of it seriously; and, indeed, were not brought forward by men of undoubted respectability of character and great experience in railway works generally, we would never have given a thing so outrageously absurd a moment's consideration, whether grave or gay.

Economics of Construction.

Economy of material and labor is the chief—I had almost said the only object of Civil Engineering.—Ignorant ingenuity may, and indeed has, executed important works; but these triumphs, though perhaps applauded by the public at large, must always appear to the eye of the scientific Architect or Engineer, to have been effected at a great waste of labor and material. The engineering wants of this great country grow so much more rapidly than even the prolific capital of the people, that here more than in any other nation, is required strict, severe economy in engineering works; and therefore as unskilful, unscientific ingenuity alone can only carry out these at a fearful waste of resource, men interested in internal improvements can see the good old 'Knickerbockers' of engineering, retiring on the laurels of a strong but untutored constructiveness, with a regret lessened by the reflection that their successors are men of science—men read up to the pitch of their glorious calling. In order to help out this progress in public works, I beg leave respectfully to throw out some hints on the strength of materials with the view of 'jogging the memory' of my brethren throughout the Union.

Table showing the weight or pressure a beam of cast iron, 1 inch in breadth, will sustain, without destroying its elastic force, when it is supported at the ends, and loaded in the middle of its length, and also the deflection in the middle which that weight will produce. Calculated by Mr. Tredgold.

L'gths 1 in.	1 foot.	2 feet.	3 feet.	4 feet.	5 feet.	6 feet.	7 feet.	8 feet.	9 feet.	10 feet.	12 feet.	14 feet.	16 feet.	18 feet.	20 feet.	22 feet.	24 feet.	26 feet.
Depth. 1 in.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.	lbs. defl.
1	850	02	425	08	283	13	212	32	170	53	106	128	95	168	192	85	20	20
2	1912	014	956	053	637	318	477	21	383	320	523	25	405	212	266	189	324	170
3	1700	04	850	09	565	33	438	23	330	25	330	25	330	25	330	25	330	25
4	2656	032	1700	072	1132	09	848	16	680	23	568	36	484	49	435	64	380	81
5	3467	052	2247	06	1508	11	1030	21	808	33	662	51	531	8	435	64	380	81
6	4280	072	2831	08	1908	13	1283	23	1030	33	808	51	662	16	531	8	435	64
7	5093	092	3467	09	2247	15	1508	25	1283	33	1030	51	808	16	662	16	531	8
8	5906	112	4093	11	2656	17	1812	27	1508	33	1283	51	1030	16	808	16	662	16
9	6719	132	4720	13	3065	19	2123	29	1812	33	1508	51	1283	16	1030	16	808	16
10	7532	152	5347	15	3474	21	2438	31	2123	33	1812	51	1508	16	1283	16	1030	16
11	8345	172	5974	17	3883	23	2853	33	2438	33	2123	51	1812	16	1508	16	1283	16
12	9158	192	6601	19	4292	25	3262	35	2853	33	2438	51	2123	16	1812	16	1508	16
13	9971	212	7228	21	4701	27	3671	37	3262	33	2853	51	2438	16	2123	16	1812	16
14	10784	232	7855	23	5110	29	4080	39	3671	33	3262	51	2853	16	2438	16	2123	16
15	11597	252	8482	25	5519	31	4489	41	4080	33	3671	51	3262	16	2853	16	2438	16
16	12410	272	9109	27	5928	33	4898	43	4489	33	4080	51	3671	16	3262	16	2853	16
17	13223	292	9736	29	6337	35	5307	45	4898	33	4489	51	4080	16	3671	16	3262	16
18	14036	312	10363	31	6746	37	5716	47	5307	33	4898	51	4489	16	4080	16	3671	16
19	14849	332	10990	33	7155	39	6125	49	5716	33	5307	51	4898	16	4489	16	4080	16
20	15662	352	11617	35	7564	41	6534	51	6125	33	5716	51	5307	16	4898	16	4489	16
21	16475	372	12244	37	7973	43	6943	53	6534	33	6125	51	5716	16	5307	16	4898	16
22	17288	392	12871	39	8382	45	7352	55	6943	33	6534	51	6125	16	5716	16	5307	16
23	18101	412	13498	41	8791	47	7761	57	7352	33	6943	51	6534	16	6125	16	5716	16
24	18914	432	14125	43	9200	49	8170	59	7761	33	7352	51	6943	16	6534	16	6125	16
25	19727	452	14752	45	9609	51	8579	61	8170	33	7761	51	7352	16	6943	16	6534	16
26	20540	472	15379	47	10018	53	8988	63	8579	33	8170	51	7761	16	7352	16	6943	16
27	21353	492	16006	49	10427	55	9397	65	8988	33	8579	51	8170	16	7761	16	7352	16
28	22166	512	16633	51	10836	57	9806	67	9397	33	8988	51	8579	16	8170	16	7761	16
29	22979	532	17260	53	11245	59	10215	69	9806	33	9397	51	8988	16	8579	16	8170	16
30	23792	552	17887	55	11654	61	10624	71	10215	33	9806	51	9397	16	8988	16	8579	16
31	24605	572	18514	57	12063	63	11033	73	10624	33	10215	51	9806	16	9397	16	8988	16
32	25418	592	19141	59	12472	65	11442	75	11033	33	10624	51	10215	16	9806	16	9397	16
33	26231	612	19768	61	12881	67	11851	77	11442	33	11033	51	10624	16	10215	16	9806	16
34	27044	632	20395	63	13290	69	12260	79	11851	33	11442	51	11033	16	10624	16	10215	16
35	27857	652	21022	65	13699	71	12669	81	12260	33	11851	51	11442	16	11033	16	10624	16
36	28670	672	21649	67	14108	73	13078	83	12669	33	12260	51	11851	16	11442	16	11033	16

* The first column shows weight in pounds: the second, the deflection in inches.

The strain to which beams are subjected results firstly from loads pressing or drawing in the direction of the lengths; and secondly from loads acting indirectly or directly across the section. The first of these may be called compressive; though, as will be seen by and by, a loaded post is chargeable in proportion to its height with a certain amount of cross-strain. The second of the first pair is called the tensile strain or tension; and acting on the cohesion of the parts along the longest line of cohesive resistance is, with the exception of the former, the most favorable strain to which material can be submitted. The strain produced by loads acting indirectly across the section on the cohesion of the parts is called torsion: this tending to make the particles of the part acted on revolve on those of the part fixed, is, when it can be avoided, an injudicious strain. The strain occasioned on a beam fixed at one end and loaded at the other, or supported at both ends and loaded between the supports, is very common in construction, although its highly unfavorable results on the economy of material should exclude it from construction where any other strain may be substituted. The analysis of a piece of frame-work into its various strains, is the first step in proportioning the material; inasmuch as the strength of material being different under different strains the scantling necessary for a bearer under a given load may be fifty times too heavy for a strut, and an hundred times too heavy for a tie. Besides this, the resolution of the forces acting on the parts of a frame are necessary on the ground of the superior fitness of a certain material for a certain strain: in a metal bridge, for instance, it is always necessary and economical that all the other parts are castings, to put in the ties in wrought iron. The reason of this is, that while the price of cast and of wrought iron is at the most as 1 to 1½, the tensile strength is in the proportion of one to four:—the skill of resolving the strains leading in such cases to a saving of 60 to 70 per cent. A knowledge of these facts gives a direction therefore to natural constructiveness by pointing out the advantage of substituting one strain for another; and further develops the true economy of construction by regulating the exact amount of material necessary to resist a given maximum strain. In the first instance I will confine my remarks to the strength of material showing its application in the case of beams of the simplest form, and reserving for some future time an article on the effects of form generally on the economy of material.

M.B.H.

To be Continued.

Railroad Iron.

1600 Tons, weighing	60½ lbs. per yard.
185 "	57½ "
580 "	53 "

of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

F. S. & S. A. Martine,

IMPORTERS and Jobbers of Railroad Car and Carriage Linings, Curtain materials, Plushes, etc.,
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3-4 and 6-4 Worsted Damasks, 3-4 and 6-4 Union Damasks, Moreens, Rattinets, Cloths, Silk and Cotton Velvets, English Bunting, Plushes, etc.

PATENT INDIA RUBBER STEAM PACKING.

This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationary Engines; Boilers, Steam pipes, Ship joints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 98 Broadway.

JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,

Utica N. Y. Sep. 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected.

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
Proposals will also be received until the 15th of Oct. next for the construction of the Railroad on the Eastern side of the Mountain, about eight and a half miles. It comprises much heavy work and a Tunnel about 720 feet long.

C. CROZET,

Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849.

TO CONTRACTORS.

ANDROSCOGGIN RAILROAD.—Proposals will be received by the subscriber, at Lewiston Falls, and by W. A. Williams, at the Engineer's Office at Leeds Centre, until the 15th of October next, for the grading and masonry of the 1st division of this road, extending from the Androscoggin and Kennebec railroad in Leeds, to Benjamin's Brook in East Livermore, 14 miles.

Plans and profiles will be ready for examination, and the route shown on and after the 9th day of October.

Proposals for the grading and masonry of the second division, extending from Benjamin's Brook to Livermore Falls, 6 miles, and for building a bridge over the Dead river in the 1st division, will be received as above until the 1st day of November next.

Plans and profiles of the 2d division will be ready for examination, and the line shown, on and after the 23d day of October next.

WILLIAM KILBOURNE, President.

September 29, 1849.

The New York Iron Bridge Co.

LATELY KNOWN AS

Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.

August 4th, 1849.

au7tf

M. M. White, Agent,

No. 74 Broadway, New York.

ALBANY AND BUFFALO RAILROADS.—

Four Trains daily, Sundays excepted, viz:
Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m.
Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours.

Arrive from Buffalo, 7 p.m., 2½ a.m., 12½ m., 3½ p.m.

Passengers by the Express Train reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12½, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The Eastern Trains leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y

Albany and Schenectady Railroad Co.

Albany, August, 1849.

NOTICE TO Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE, }
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

To Philo B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York. 34tf

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

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LEA AND BLANCHARD, Philadelphia, publish the following important works on various branches of Practical Science. They will be found exceedingly low in price, while their mechanical and typographical execution are of the best kind.

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Principles of mechanics applied to machinery and engineering by Julius Weisbach. Translated by Professor Gordon of Glasgow, and Edited by Professor Walter R. Johnson. In two very handsome octavo volumes, with 872 illustrations on wood.

From Charles H. Haswell, Esq., Engineer in Chief, U. S. N.

The design of the author in supplying the instructor with a guide for teaching, and the student with an auxiliary for the acquirement of the science of mechanics, has, in my opinion, been attained in a most successful manner. The illustrations, in the fullness of their construction, and in typographical execution, are without a parallel. It will afford me much pleasure to recommend its use by the members of the profession with which I am connected.

This work is one of the most interesting to mathematicians than has been laid before us for some time; and we may safely term it a scientific gem.—*The Builder*.

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Unequalled by anything of the kind yet produced in this country—the most standard book on mechanics, machinery and engineering now extant.—*N. Y. Commercial*.

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that can be conceived to arise in the field either of demonstration or operation.—*Methodist Quarterly Review*.

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In addition to the valuable scientific matter contained in the original work, very extensive American additions have been made to it by the editor, which are exceedingly valuable, and of much interest to the general reader. The publishers have spared no pains in bringing out a work of superior mechanical execution and rare excellence, with numerous skillfully engraved cuts, designed to illustrate the various subjects treated in this work. We feel confident that, as a truly useful publication, it will be eagerly sought after and highly appreciated.—*N. Y. Farmer and Mechanic*.

III.

Principles of Physics and Meteorology, by Professor J. Muller, Edited with additions by R. Eglsfeld Grifflith. In one large octavo volume, with 550 wood engravings and two colored plates.

This is a book of no ordinary or ephemeral value.—It is one of a series, now republishing in London, on the different branches of science, which from its thorough character and extended range, is much needed in this country. Its design is to render more easily accessible an extensive knowledge of the general principles of physics and meteorology; and the distinguished author has certainly realized the design to a wonderful extent. The subject treated upon are very numerous—statics, hydrostatics, dynamics, hydrodynamics, pneumatics, the laws of the motions of waves in general, sound, the theory of musical notes, the voice and hearing, geometrical and physical optics, magnetism, electricity and galvanism, in all their subdivisions, heat and meteorology. The size is nevertheless convenient—one handsome octavo volume, of six hundred pages—in clear, bold type, and profusely illustrated. In the execution of the illustrations we have rarely seen any thing equal to this American edition.—*N. Y. Commercial*.

IV.

Practical Pharmacy; comprising the arrangements, apparatus, and manipulations of the Pharmaceutical Shop and Laboratory. By Francis Mohr, Ph. D., and Theophilus Redwood. Edited with alterations and additions by W. Proctor, Jr. One very handsome octavo volume, with 506 engravings on wood.

We had scarcely finished a glance at the beautiful London edition of Mohr and Redwood's pharmacy, before Professor Proctor's improved edition of this fine technical treatise, was laid on our table by Messrs. Lea and Blanchard. This work is one which will at once find its place in every laboratory and pharmaceutical shop, and is well calculated to recommend new and improved methods of manipulation to both chemists and pharmacists. In the absence of highly appointed laboratories and of pharmaceutical instruction which is so general in this country, such works as the present are particularly valuable. The beautiful and abundant wood cuts which adorn almost every page of the book, enter the descriptions of apparatus perfectly plain, and its reconstruction easy even by the tyro. Professor Proctor has long been known to pharmaceutical readers in this country, as the author of numerous and important researches in the *Materia Medica*, and his additions to the present edition of Mohr and Redwood are frequent and valuable.

The American Journal of Science and Arts.

V.

The Young Millwright and Millers Guide; Illustrated by Twenty Eight Descriptive Plates, by Oliver Evans. Twelfth Edition, with additions and corrections, by Thomas P. Jones, with a description of an Improved Merchant Flour Mill, with Engravings, by C. and O. Evans. In one volume 8vo., with 110 figures on twenty eight plates.

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Black Lead Paints, prepared for various purposes. This paint is peculiarly adapted for the covering of all kinds of iron railing, or iron work wherever exposed; such as railroad bars, anchors, bolts for vessels, etc.—It makes the most durable paint to protect woodwork from moisture, and the indestructible nature of the body of it peculiarly fits it for covering the inside of depots, roofs of buildings, and all wood work exposed to fire.

The mine from which this article is taken is near Raleigh N. C. It has been examined by many of the most scientific men in this country, who all concur in pronouncing it of the best quality. In the fourth vol. of the American Journal of science, Professor Silliman speaks of it in the following manner. "The Plumbago from North Carolina is of a very fine quality and appears well adapted for pot & crayons." Professor Dewy speaks of it "as the finest he ever saw." Professor Olmstead, now of Yale College in his geological report of the State of North Carolina, Page 5 says.—"Not long since I received a letter from a gentleman in Vermont who contemplated setting up the manufacture of Black Lead Pots or Crucibles, requesting some particulars respecting this Plumbago, having been informed on the highest authority, that it was the best that could be procured within the United States."

It is a very fine article and superior for Pencils also for Crucibles, Pots etc., when the composition of silicious minerals is properly made to suit it, and may be had in any reasonable quantities of the subscriber on liberal terms at Raleigh North Carolina or at James Holme 55 West St. New York.

Sep., 7th 1849.

Richard Smith,

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,

No. 24 Commercial St. Boston.

August, 16, 1849.

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BUSINESS CARDS.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately ex-
ecuted. Pupils instructed theoretically and practical-
ly at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.

Mr. M. Burr Hewson, *Civil Engineer*, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.

Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates
Plans and Specifications furnished for Dams, Bridges,
Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal 'CED'
—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite
Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad
Iron at a fixed price, to be made of any required
ordinary section, and of approved stamp.

They are generally prepared to contract for the de-
livery of Railroad Iron, Pig, Bar and Sheet Iron—or
to take orders for the same—all of favorite brands, and
on the usual terms.

March 29 1849.

ILLIUS & MAKIN.
41 Broad street.
3m.13

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by
GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of
Erastus Corning & Co Albany; Meritt & Co., New
York; E. Pratt & Br 100, Es. More Md

LAP-WELDED WROUGHT IRON TUBES

TUBULAR BOILERS, FROM 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron. **THOMAS B. SANDS & CO.,**
22 South William street,
New York.

February 3, 1849.

Iron Store.

THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Philadelphia, Potts-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Boil-
er rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Communi-
cations addressed to either of the subscribers will have
prompt attention. **J. F. WINSLOW, President**

Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill River,
near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to
COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by
A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

150 tons No. 1 Boonton Foundry Pig Iron.
100 " No. 2 do. do. do.
300 " Nos. 2 & 3 Forge do. do.
100 " No. 2 Glendon do. do.
140 " Nos. 2 & 3 Lehigh Crane do do.
100 " No. 1 Pompton Charcoal do.
100 " New-Jersey Blooms
50 " New-Jersey Faggoting Iron, for shafts
Best Bars, $\frac{1}{2}$ to 4 inch by $\frac{1}{2}$ to 1 inch thick.
Do do Rounds and Squares, $\frac{1}{2}$ to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
Half Rounds, $\frac{1}{2}$ to 1 in. Ovals & Half Ovals $\frac{1}{2}$ to 1 $\frac{1}{2}$ in.
Bands, $\frac{1}{2}$ to 4 inch. Hoops, $\frac{1}{2}$ to 2 inch.
Trunk Hoops, $\frac{1}{2}$ to 1 $\frac{1}{2}$ in. Horse Shoe & Nut Iron.
DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

Railroad Iron.

THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, and manufactured in conformity with special specifications.

They offer also to import and contract to deliver ahead—on favorable terms.

DAVIS, BROOKS, & CO.,
63 Broad street.

New York, Oct. 11, 1849.

Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. **D., B. & Co.**
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc. by
JOHN A. ROEBLING, Civil Engineer,
Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from $\frac{1}{4}$ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,**
Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 28, 1849.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.
All of which are offered for sale on the most favorable terms by
WM. JESSOP & SONS,
91 John street, New York.
Also by their Agents—
Curtiss & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.
Albany, August 18, 1849.

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,
Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catawba*, Va., *Furnaces*, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.
American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests*.
Baltimore, June 14, 1849. 6 mos

Monument Foundry.

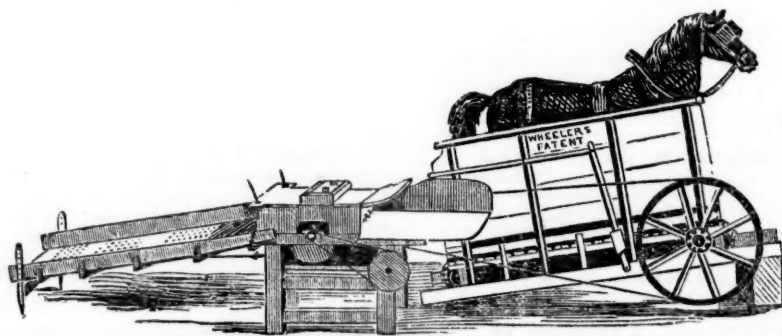
A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
In complete operation, are prepared to execute faithfully and promptly, orders for
Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,
Slide, Hand or Chuck Lathes,
Machinery for cutting all kinds of Gearing.
Hydraulic, Tobacco and other Presses,
Car and Locomotive patent Ring Wheels, warranted,
Bridge and Mill Castings of every description,
Gas and Water Pipes of all sizes, warranted,
Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete
Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.
Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.
June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS,
Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by
ICHABOD WASHBURN.
Worcester, Mass., May 25, 1849.

American and Foreign Iron. FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " "
100 " 2, " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " "
50 " Catoctin " "
250 " Chikiswalungo " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x $\frac{1}{4}$ Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.
Locomotive and other boiler iron furnished to order.
GOODHUE & CO.,
New York. 64 South street

Railroad Horse Power and Saw Mill.

The above cut represents the most simply constructed Endless Railway Power in use. As shown it is attached to a threshing machine, with which it is most extensively used; but for sawing wood at railroad stations it has no superior. The saw mill which accompanies it is simple, cheap and convenient. The single power by the weight of the horse at the elevation of one and a half inches to the foot—the horse weighing eleven hundred pounds—is capable, with the attention of at most three men, of sawing twice in two from 12 to 20 cords of four foot wood per day. They have been used several years on several roads in New England, and for manufacturing establishments more than three thousand of these powers are in use, and without exception have given universal satisfaction. Their principal advantage is, their great simplicity: the full speed being obtained with simple rack and pinion, without intermediate gearing. They are warranted to give satisfaction as above described, or may be returned at my expense, and the purchase money refunded.

September 6, 1849.

HORACE L. EMERY,
Nos. 469 & 371 Broadway, Albany, N. Y.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.

August 24, 1848.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,**
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**
at Beaver Meadow, Pa.

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer*—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

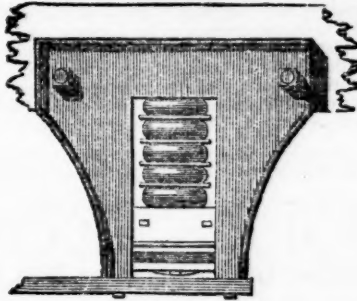
The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,
JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

Patent India-rubber Springs.

FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four years ago.

They claim the exclusive right to use Springs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was granted in January last to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and this will be done in every case of violation.

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having tried to make a spring which Mr. Fuller did make and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Knevitt has never stated that the springs were put on by him, which are referred to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs. Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevitt, setting forth the facts of the case.

The springs referred to were put on by Mr. Ray before Mr. Knevitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for advertising to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual referred to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but from that hour to the present, not a single communication has been received from the said agent. Some of their models, however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of Mr. Knevitt the Agent, at 38 Broadway New York, and of Messrs. James Lee & Co., 18 India Wharf, Boston.

—May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,

SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,**
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32-1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

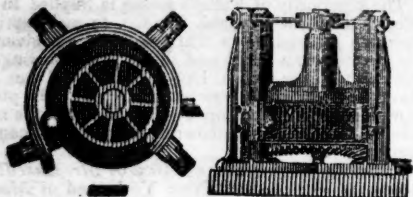
4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES.

Published by **WM. MINIFIE & CO.,**
114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. **P. A. BURDEN.**

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co., }
March 12, 1848. }

ENGINE AND CAR WORKS.**DAVENPORT & BRIDGES,**

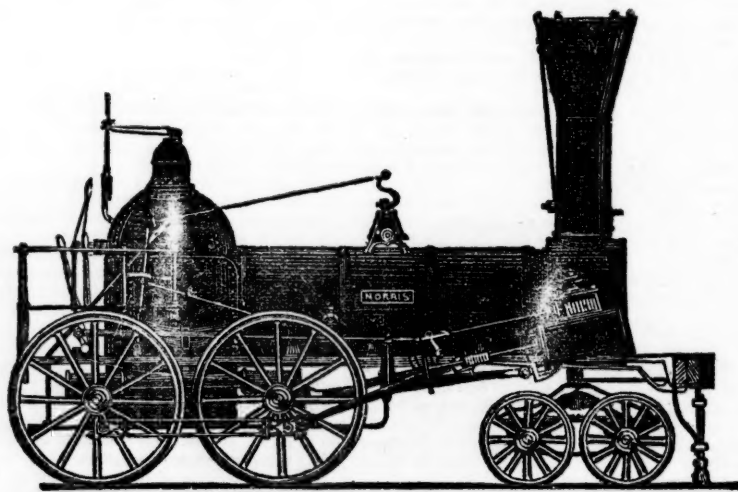
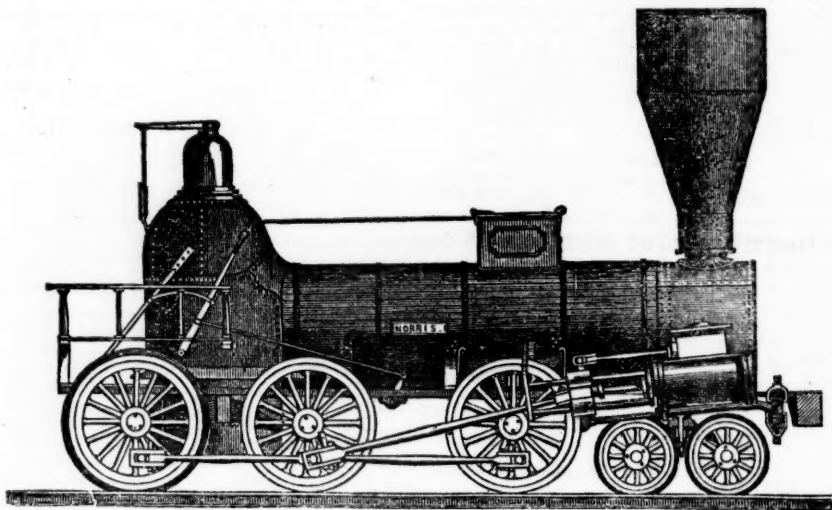
HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.